

Submission to the national Royal Commission on bushfires Issues Paper – health arrangements in natural disasters

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Healthy planet, healthy people

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National Royal Commission into Natural Disaster Arrangements
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National Royal Commission Issue Paper – Health Arrangements in Natural Disasters
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Doctors for the Environment Australia

Doctors for the Environment Australia (DEA) is an independent, self-funded, non-Government organisation of medical doctors in all Australian States and Territories. Our members work across all specialties in community, hospital and private practices. We work to prevent and address the diseases - local, national and global - caused by damage to our natural environment. We are a public health voice in the sphere of environmental health with a primary focus on the health harms from pollution and climate change.

Climate change as the unifying theme in natural disasters

Any discussion on natural disaster management must acknowledge that climate change is an underlying driver of extreme weather and is a national economic, health and security threat which merits statutory action. Bushfires, smoke events, heatwaves and drought are often treated as individual issues, when in fact they are interrelated. Australia needs a comprehensive national assessment of risks to human health from climate change, such as those of the United Kingdom¹ and the United States,² and national spending on climate change health research, which has so far been miniscule. An evidence base is essential to drive a national climate change and health strategy to protect the health of Australians.³

- Doctors for the Environment Australia (DEA) policy paper: *Action on Climate Change and Health: Governance and Strategy*⁴ details the need for federal leadership and new Commonwealth laws to guide climate change mitigation and adaptation.
- The Climate and Health Alliance (CAHA) has developed a *Framework for a National Strategy on Climate Health and Well-Being*.⁵
- The AMA called for a *National Strategy for Health and Climate Change* in 2015.⁶
- *The 2019 report of the MJA-Lancet Countdown on health and climate change*,⁷ concludes that Australia remains at significant risk of declines in health due to climate change, and that substantial and sustained national action is urgently required in order to prevent this.
- RACGP has a position paper on *Climate Change and Human Health*,⁸ that recognises climate change as a key public health issue.
- Last year most major medical organisations in Australia, and many others around the world declared a *Climate Health Emergency*.⁹

Q1. Are the current national health coordination arrangements appropriate to respond to natural disasters in Australia? If not, how should they be improved?

Current national health coordination arrangements for disaster planning are fragmented, with a lack of coordination between states, and metropolitan and regional divides - with a

significant omission being dissemination and receipt of information to front-line health care workers. In most jurisdictions, emergency service responses and government department disaster planning occur in silos separate from hospital and primary care disaster planning and separate from GPs and health clinics.

There is a need for federal integration of health care responses through a national body tasked with decision making in health emergencies. In other countries, the US Centre for Disease Control ¹⁰ and the UK's Public Health England ¹¹ exist as national health protection agencies involved in disaster response. In Australia, responsibility lies with the states and territories, with knowledge and expertise fragmented between eight separate jurisdictions. It is obvious that natural disasters do not respect state boundaries.

Q2. Should primary care providers and primary health networks be better integrated in natural disaster preparedness, response and recovery? If so, how should this be done?

The AMA's position statement ¹² calls on all levels of government to incorporate GPs into emergency response and disaster planning models. DEA also strongly supports the RACGP's submission to the Royal Commission into National Disaster Arrangements ¹³, which states that GPs are essential in supporting individuals and communities before, during and after natural disasters and emergencies.

Disaster planning at a primary health care level

Most hospitals and health care networks have disaster plans; these plans will often be tested with exercises involving hospitals, emergency services and occasionally the broader health care systems. Disaster plans are generally constructed around a significant, well-defined, short-lived event such as a bombing or stadium collapse. However, most natural disasters have a sustained impact over weeks to months. Disaster plans which rely on the capacity of health systems to respond with immediate and short-term reallocation of resources are not easily adapted to a sustained response to an ongoing crisis. Planning for natural disasters has more in common with hospital 'surge' plans than conventional disaster plans.

A national primary health care strategy would need to adapt and revise existing disaster plans to meet both acute and long-term challenges to health systems. GPs and primary health care workers need to be closely involved in planning processes, and appropriate funding is needed to deliver health care in the acute and recovery phases of a disaster response.

Primary health care networks are integral to preparing communities for natural disasters. This may include dissemination of health information and identifying patients who are particularly vulnerable (i.e. have comorbidities, or poor social situations), ensuring that they take precautions and are monitored.

Regional responses and workforce distribution

Disaster preparedness will be determined by the specific vulnerability characteristics of regional communities and tailored to specific threats such as bushfires, smoke events, floods, and the mental health impacts of drought on regional communities.

Policy makers must prepare for the predicted health impacts of climate change and begin to implement long term adaptive health policies, particularly in regional communities most vulnerable to natural disasters. ¹⁴

There is a well-recognised maldistribution of the medical workforce to metropolitan areas. Whilst many natural disasters such as extreme heat will have significant health impacts on those living in major cities, those in rural and regional areas can be disproportionately affected by extreme weather. The result is that there will be a greater need for primary medical care in these regions, and workforce planning needs to take into account a framework for surge capacity to match demand.

Workforce difficulties were seen during the recent bushfires where there was an influx of emergency medicine personnel offering assistance, when the needs of the affected communities skewed towards GP primary care and chronic disease management.

Mental health

GP involvement in mental health care in natural disasters is essential. GPs will know their communities, who to watch out for, who is already mentally ill, and who needs to be monitored. They will often be the first point of contact for those who are not coping.

The stage of a disaster is relevant. Initially, the most vulnerable may decompensate. But the ongoing cascade of grief and further losses can occur over years, leading to delayed mental health disorders which need to be anticipated, diagnosed and treated.

The provision of basic needs to communities and families should be done as quickly as possible and many people recover quickly with restoration of services. The return of robust community structures is a great asset to the recovery of parents and children, ¹⁵ and the impact upon children of disasters, such as bushfires, is often mediated by the impact upon parents and their parenting. ¹⁶

Delays in providing money, when large amounts were donated and publicised as such, then not delivered, are a very significant stressor for people in desperate need.

Q3. What approaches could be adopted to better support primary care providers to provide health services in the response and recovery phases of a natural disaster?

Public information campaigns

There is significant literature regarding the importance of accessibility, clarity and consistency in public health messaging during all phases of a natural disaster. ¹⁷ Clear,

coordinated and standardised campaigns regarding plans for the provision of care and support by primary care providers during natural disasters must be developed and have channels for easy dissemination.

Early alert systems

The majority of local councils have well-developed text messaging services to notify residents and individuals of potential and/or imminent disasters; these must be integrated with local health systems.¹⁸

Appropriate health workforce training

Disaster management is embedded within the Fellowship curriculum for the Australasian College for Emergency Medicine, but it appears that this is not the case for other similar specialist medical colleges, such as RACGP. This could be addressed by development of tailored curricula, and with the development of online modules as well as workshops for infrequently encountered emergency skills.

There are no resources specifically tailored for GPs on management of mental health issues or Post-Traumatic Stress Disorder (PTSD) after bushfires. There is material on PTSD from the Royal Australian and NZ College of Psychiatrists which could be tailored for primary care practitioners.

Frontline health care worker training needs to embed the principles that extreme weather events exacerbate health inequities and that opportunities be sought to promote health and social equity.

Appropriate funding to primary care for training and disaster planning purposes (which are likely to occur within state health departments)

Support for regional and remote communities

Regional and remote areas can be disproportionately affected by natural disasters, and further disadvantaged by;

- Risk of disruptions to normal supply chains as well as usual referral and retrieval pathways (e.g. helicopter retrieval of sick patients is unsafe in thick bushfire smoke).
- Robust processes for GPs and pharmacies to obtain supplies is important, as well as ensuring these are funded appropriately at a governmental level.
- Most GP practices are not equipped to manage significant disasters and may have a lack of basic medical equipment, medicines and Personal Protective Equipment (PPE).
- The greater need for primary medical care, which should be matched with an appropriate extra workforce.

For example, a colleague working near the January fires used her Facebook contacts to ask for volunteer doctors and nurses because there was no existing organisation or framework to facilitate the extra staff needed. She also spoke of the difficulties the pharmacist had

getting stocks of necessary items such as Ventolin which ended up being flown in by private aircraft.

Welfare of health care workers.

A significant aspect of natural disasters that receives little attention is the health and wellbeing of GPs and other health workers themselves, who may have been personally impacted by disasters in their communities. The assumption that they can readily take on the greater load, without their own situation being properly addressed, is really concerning.

Q4. Should a standard approach to reporting and categorising air quality across Australia be implemented, and if so, how?

Air quality monitoring requires a nationalised approach, providing standardised information that is clearly understandable and consistent between different states and jurisdictions within Australia.

- Currently, some jurisdictions report air quality using the AQI (Air Quality Index - which is a composite measurement based on multiple pollutants) while others report individual pollutants such as PM2.5 levels. DEA recommends that the levels of individual pollutants be available to the public in an easily understandable format, comparable between different states and jurisdictions.
- Weather conditions can change rapidly in bushfire seasons, so real time or hourly averages (not 24-hour averages) of PM levels are required to monitor air quality.¹⁹
- In many parts of the country, there are inadequate numbers of air quality monitoring stations. DEA recommends increasing the number of stations at state and territory levels, both portable and fixed. DEA also supports the use of low-cost portable sensors that can be rapidly deployed in a bushfire emergency. It must be noted that some low-cost particulate matter sensors may have poor accuracy and provide only coarse information about air quality so care must be taken in choosing the quality of sensors deployed.²⁰ Increased numbers and distribution of monitors allows for detailed health advice based on location-specific air quality data and forecasts, allowing planning of daily activities including outdoor exercise.
- Data on hourly or real time PM levels, and monitoring station location information, could be made available even in times of low bushfire activity to educate users about air quality parameters.
- SMS alert systems for poor air events should be made available through apps on mobile phones, particularly for those vulnerable to the effects of bushfire smoke with appropriate health advice, e.g. <https://www.airrater.org/>
- During a prolonged bushfire emergency, those not directly impacted by fires need information for planning outdoor events such as school or community sports, individual exercise or active travel. This would be assisted by establishing a 1-hour particle standard and asking the Bureau of Meteorology to develop methods to predict smoke exceedances as part of weather forecasting. NSW has adopted interim 1-hour standards of 80 for PM10, and 62 for PM2.5 which seem appropriate levels at which to cancel sports events.
- Hazard reduction burning may itself create health problems in relation to bushfire smoke, and risk management of such problems must be factored into burns,

especially with regard to minimising smoke exposure in vulnerable groups. Local communities should be notified in advance when their burn is scheduled. Comprehensive air quality monitoring must be carried out for the duration of hazard reduction burns with information available to affected communities. Smoke from hazard reduction burning can travel long distances and pool in airsheds under certain meteorological conditions so air quality monitoring must extend to more distant areas that may be affected. ²¹

- Australia's national air quality standards for particulate matter have only recently been updated after many years of neglect, and the review of standards for other pollutants is still way overdue. Given the need to keep pace with changing science on the health impacts of air pollutants, DEA recommends national air quality standards be reviewed every ten years and that this requirement be legislated. ²²

Q5. How should public health information about bushfire smoke be improved?

Despite the clear evidence of health harms from bushfire smoke, ^{23,24} there is incomplete and inconsistent information and no nationally co-ordinated or standardised approach on how people can best protect themselves on days of high air pollution.

- Advice to staying indoors is a short-term measure and is clearly impractical over many months of bushfire smoke, particularly for commuters and outdoor workers. Older "leaky" houses and buildings are often inadequately sealed and may not offer any protection from outdoor air pollution. Air-conditioners are only able to remove PM2.5 when fitted with specific high-efficiency (HEPA) filters and are only effective at doing so in sealed buildings. Last summer's smoke event saw many people purchasing air purifiers but there was little clear public guidance on their efficacy, and purchase of an ineffective machine could lead to a false sense of security. Further research should be commissioned to give clear guidance to the community on which appliances are useful, under what conditions and which are a waste of money. ²⁵
- Health advice needs to be tailored to particular conditions of the time, and activities timed for periods of better air quality. Real time or hourly measurements of PM2.5 at nearby monitoring stations is vital in order for the public to make decisions on being outdoors.
- Advice regarding facemasks is confusing, inconsistent, and often based on inadequate knowledge about the benefits and challenges of using facemasks. Paper and simple cloth face masks are ineffective at filtering very small smoke particles or toxic gases. P2/N95 face masks, usually used in occupational exposures, may filter out small particulate matter but do not offer protection from toxic gases. They are often uncomfortable or inefficient (e.g. facial hair), need to be properly fitted and are impractical for children's use.
- There needs to be specific advice tailored to vulnerable groups within communities, such as pregnant women, people with heart and lung disease, the elderly and those with infants and young children. For example, "smoke plans" could be developed for residential care facilities.

- Public health information needs to be disseminated to the public before and in times of bushfire crisis. This can be done through primary health providers such as GPs or health clinics, and also made available through media outlets, mobile phone apps or mobile phone warning systems.
- Health risks of smoke from hazard reduction burning must be recognised and managed.

Q6. What should be the priority areas of research concerning the physical and mental health impacts of natural disasters?

Measuring morbidity and mortality

Morbidity and mortality records typically under-report health data associated with environmental disasters or extreme weather events. This includes ‘hidden’ deaths due to comorbidities such as ischaemic heart disease or lung disease which are exacerbated by heat or bushfire smoke. Systems of health records and death certification need modernisation to include non-medical external factors. Physicians need better training in death certificate completion, which should include data on concurrent extreme weather events.²⁶

Mental health

Natural disasters are a major trigger for mental illness.²⁷ Extreme weather events have serious, long-term and complex impacts on mental health, with vulnerable groups disproportionately affected.

- For those directly involved, acute trauma and stress can impair their ability to function in the immediate aftermath.
- While many people show resilience and recover well, adverse outcomes can be triggered in others. There is well established evidence that in populations affected by extreme weather events, there are increased rates of stress, depression, anxiety, post- traumatic stress disorder (PTSD), alcohol and substance abuse, aggression and violence, suicide, and triggering of underlying mental health problems.
- There is a need for research to better understand the policies and actions needed to support adults, strengthen family systems and strengthen communities to improve resilience so they are better able to address the mental health impacts of natural disasters.
- Research on mental health must continue for at least a five-year framework to account for long-term mental health impacts.

Bushfire smoke

Most research on the harms of bushfire smoke has been on bushfires of days or weeks duration.²⁸ But of particular concern is the effects of repeated short term or long-term (months) of exposure to pollutants from bushfire smoke on both healthy populations and vulnerable groups. Long-term follow up needs to be of at least a five-year time frame.

- Even healthy people could develop serious illnesses after exposure to weeks of dangerous levels of smoke, and the cumulative effect of repeated bushfire smoke injury and repair cycles on the lung is unknown.²⁹ Because this level of exposure is

unprecedented, there has been little research as to whether this will increase the amount of respiratory and other diseases in the community.

- Longer-term exposure to PM2.5 has been linked to heart and lung disease, strokes, type 2 diabetes, and poorer birth outcomes.
- Children are especially vulnerable to smoke. Their organs are growing rapidly, they spend more time outdoors and they inhale disproportionately larger doses of pollutants than adults. Air pollution can lead to poor lung development in children and to other problems such as increased risk of asthma attacks.
- Bushfire smoke is harmful to active adults. A person exercising vigorously inhales three to five times more air than someone at rest, which means more smoke is inhaled and more particles are deposited in the lungs and absorbed by the bloodstream.
- Quantifying the economic health burden of bushfire smoke would incentivise public policy to improve its management.

The Hazelwood Health Study³⁰ is an ongoing research project led by Monash University in collaboration with Federation University, University of Tasmania, University of Adelaide, and the CSIRO and is now in its sixth year. The Hazelwood Health Study is about identifying potential health outcomes for people who may have been impacted by the smoke from the 2014 Hazelwood coal mine fire. Findings so far include evidence of longer-term respiratory impacts on adults and children.

Protection from bushfire smoke

More research is needed to identify effective methods of mitigating health impacts from bushfire smoke and develop best-practice guidelines on how people can best protect themselves, both in the short-term, and over long-term exposures.

Research is clearly needed into evaluating the effectiveness and drawbacks of the range of commercially available face masks, air conditioning filters, other indoor protective measures, and how best to protect outdoor workers on days of high bushfire smoke pollution. Much more information is needed for the public to make informed choices.

Health and well-being of firefighters

Firefighters can be exposed for months to “smoke, heat, noise, and toxic substances, yet there were few, if any, measures in place to monitor the exposure”.³¹ While P2 masks provide some protection from particles they are difficult to work with and maintain in the correct position. They also do not protect against volatile toxic gases. Contaminants from household chemicals, firefighting foam and asbestos exposure are revealed as risks both during the bushfires and in the subsequent clean up phase. The ash left behind when buildings are burnt is a particular hazard, as it can contain elevated levels of lead, copper, chromium, arsenic, and asbestos. Research into the short and long term physical and mental health of firefighters is urgently needed.

Many of the firefighters were themselves victims of the bushfires and lost homes, stock and property. The mental health and well-being of firefighters must be a high priority in any review of this disaster. There is heavy reliance on volunteer firefighters who work for some months, losing time at work and time with their families, and at least one study has

highlighted significant mental health impacts.³² Without better understanding of the health risks to our firefighters we cannot give best-practice health advice during and in the aftermath of fires.

Heatwaves

Heatwaves are becoming hotter, longer and more frequent and are associated with surges in morbidity and mortality which in turn places enormous stresses on the health care system. There is limited research measuring the effectiveness of public health interventions for extreme heat heat-health action plans, although there is some evidence to suggest benefit. This is a very important area for further research.

Effective preventive action by primary health care practitioners may help to relieve stresses on the hospital sector. General practitioners are being urged to identify patients at risk and educate them and their carers about heat illness and prevention, even including a pre-summer medical assessment for those with chronic disease. However, the extent to which this is actually implemented is unclear. Further research into prevention of heat-related illness would be highly beneficial.

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² <https://www.niehs.nih.gov/health/topics/agents/climate-change/index.cfm>

³ <https://www.mja.com.au/journal/2017/207/6/extreme-heat-threatens-health-australians>

⁴ <https://www.dea.org.au/dea-policy-action-on-climate-change-and-health-governance-and-strategy/>

⁵ https://d3n8a8pro7vnm.cloudfront.net/caha/pages/40/attachments/original/1498008324/CAHA_Framework_for_a_National_Strategy_on_Climate_Health_and_Well-being_v05_SCREEN_%28Full_Report%29.pdf?1498008324

⁶ <https://ama.com.au/position-statement/ama-position-statement-climate-change-and-human-health-2004-revised-2015>

⁷ <https://www.mja.com.au/journal/2019/211/11/2019-report-mja-lancet-countdown-health-and-climate-change-turbulent-year-mixed>

⁸ <https://www.racgp.org.au/advocacy/position-statements/view-all-position-statements/clinical-and-practice-management/the-impact-of-climate-change-on-human-health>

⁹ <https://climateemergency-notimeforgames.nationbuilder.com/>

¹⁰ <https://www.cdc.gov/>

¹¹ <https://www.gov.uk/government/organisations/public-health-england>

¹² <https://ama.com.au/position-statement/involvement-gps-disaster-and-emergency-planning-2012>

¹³ <https://naturaldisaster.royalcommission.gov.au/publications/nnd00100617>

¹⁴ <https://www.racgp.org.au/afp/200712/200712Blashki.pdf>

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- ¹⁶ https://link.springer.com/chapter/10.1007/978-1-4615-2820-3_48
- ¹⁷ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3778998/>
- ¹⁸ <https://www.racgp.org.au/download/Documents/e-health/Managing-emergencies-in-general-practice.pdf>
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- ²² <https://www.dea.org.au/proposed-variation-to-the-ambient-air-quality-measure-standards-for-ozone-no2-and-so2-submission/>
- ²³ <https://www.dea.org.au/lessons-to-be-learnt-in-relation-to-the-australian-bushfire-season-2019-20/>
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